

There are compelling technical and philosophical reasons for introducing a statutory limitation on the bandwidth of SSB and AM signals used on the HF amateur bands.

The concept that the human male voice contains the great majority of its audio energy between 300 and 3000Hz is not some arbitrary idea cooked up by the ARRL in 1914. Nor is it some law enacted by government fiat. It is a natural law, and existed long before there were any transceivers around for us to talk into. As such, it was a perfectly natural outcome for early radio pioneers to specify that same audio bandwidth for most efficient operation. The SSB pioneers among these recognized immediately the benefits of eliminating the carrier and one of the sidebands, then essentially stuffing the power originally used in them into a single sideband.

The classic SSB channel accepted by the vast majority of hams is a maximum of 3kHz wide because it *\*works\** with the best *\*efficiency to bandwidth\** trade-off. In my opinion, 3.0kHz is the implied bandwidth in Part 97, para 97.307. That implication should be made explicit. The same arguments hold for a limit of 6kHz for AM.

Part 97, para 97.307 states:

(a) No amateur station transmission shall occupy more bandwidth than necessary for the information rate and emission type being transmitted, in accordance with good amateur practice.

I've always believed this wording has been a mess just waiting to happen. Now that mess *\*is\** happening, and it needs to be cleaned up. Those running wideband SSB and AM have interpreted their bandwidth as "necessary for the information rate and emission type being transmitted" (ie: wideband SSB/AM) and even less believably, "in accordance with good amateur practice." In my opinion, such operation violates the spirit *\*and\** the letter of 97.307, vague as that paragraph may be.

In earlier, possibly more considerate days this wording sufficed -- the ham population policed itself. Now, a relatively small group of individuals has stretched 97.307 to include SSB transmissions of double (or greater) the accepted bandwidth for effective communication. I've had personal experience with at least two SSB signals I measured in real-time at 6kHz width.

I certainly agree with those who would rather not have more laws and rules put on the books unnecessarily. Unfortunately in this case, unless specific bandwidth figures are not included in Part 97, the widebanders will continue to stretch what regs there are to the breaking point. Another person responding has mentioned a compromise might be in order: 100-3600Hz at -3dB. I don't think this will work, because if the FCC specifies 3600Hz top modulating frequency, this group will simply stretch it to 4200Hz citing slop in their filters. Limiting the maximum modulating bandwidth for SSB and AM to 3.0kHz and 6.0kHz respectively at -3dB will allow for claimed and real variations in filter shape factors. It will give them enough leeway to move out to (some would say get away with) that 3600Hz figure -- a little like the cops refraining from nailing you until you pass that 9mph-over threshold.

Some last observations (as if I'm not in hot water already...but what are public debates for?). There is nothing innovative or experimental about wideband SSB or AM. PSK-31 was innovative. Moonbounce was innovative. Packet was innovative. Spread spectrum was/is innovative. So-called wideband operation on HF via bypassing selective filters or running wide audio is anti-innovation, a movement directly and solidly backwards. It is known with 100% certainty what will happen when wide-bandwidth audio is used to modulate an SSB or AM transmitter -- the signal will exhibit a wider frequency response to someone with a wideband receiver, and the signal will consume more RF spectrum. Modulating frequencies below 300Hz (even 500Hz) result in wasted power during noisy conditions. Anyone active on HF has noticed this -- the "bassy" sigs disappear in the QRN.

My real problem here is not with the anti-innovation part. If people want to use stone knives and bearskins it's fine with me. But the HF bands are very crowded (especially 40, with the competing broadcasters), and the anti-innovation shouldn't be done at the expense of the rest of us trying to wedge in with the standard, accepted, theoretically and empirically supported bandwidth.

It would be advisable to change the wording of the original proposal to reflect 3.0kHz/6.0kHz max transmitted bandwidth for SSB and AM signals respectively. This would be more in keeping with the previously accepted figures. The specification should be for TRANSMITTED or RF bandwidth, because the actual width of the resultant signal is what ultimately matters.

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